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STATISTICAL BULLETIN
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THE ULTIMATE CONTROL OF TUBERCULOSIS

Tuberculosis is rapidly being eliminated as an important element in the mortality of the American people. The year 1928 will show the lowest deathrate on record for this disease, probably not more than 70 per hundred thousand of population, which will be about 7 less than the figure for last year. This was the forecast made by Dr. LOUIS I. DUBLIN, Statistician of the Metropolitan Life Insurance Company, speaking at the annual meeting of the NEW YORK CITY TUBERCULOSIS AND HEALTH CONFERENCE at the Hotel Biltmore, October 22, 1928.

No one thirty years ago, when the anti-tuberculosis movement was actively launched in America, would have dared to prophesy any such achievement as has actually occurred in the United States in this short interval. At that time, the deathrate from tuberculosis was close to three times as high as it is now, and this disease was the first of the causes of death. But with the establishment of the NATIONAL TUBERCULOSIS ASSOCIATION and the launching of local societies all over the country, which, cooperating with the departments of health, inaugurated a definite policy of tuberculosis control, the mortality from the disease began to fall at a remarkably fast rate, which has not only continued, but accelerated its velocity with time. That is the situation today, and it gives good ground for a reliable forecast for ten years ahead. Speaking to this point, Dr. DUBLIN said that if the present economic prosperity and the activities of health departments and of the private welfare agencies against the disease were continued, it should be entirely possible to bring tuberculosis down from the fifth place which it now occupies to one of the relatively minor causes of death. He actually predicted that a rate of 40 per hundred thousand or less would be observed in 1937.

No one can fully realize what this drop in tuberculosis has meant in bettering the conditions of life of the American people. This year

140,000 persons are alive and well who would have died from tuberculosis had the rates of 1900 still prevailed. Many of these would have been young men with beginning families. Such lives saved mean so many less widows and orphans. And if we further remember that for every death prevented at least ten times as many open cases are prevented at the same time, we can very well understand why the American people are today enjoying unprecedented prosperity and a standard of life unequaled by that of any other country. By learning how to control tuberculosis we have prevented the greatest single factor in producing poverty and misery. The success of the tuberculosis campaign is the most outstanding example of the effectiveness of the general public health movement, and Dr. DUBLIN insisted that there was no reason why the work that had been launched should not be increased and carried on with even greater energy in order to bring about a successful termination of the campaign.

THE 1927 LIFE TABLE FOR AMERICAN WORKERS

The year 1927, which saw the lowest mortality rates ever observed among the Industrial policyholders of the Metropolitan Life Insurance Company, also established among them an exceptional record of longevity. The expectation of life, at birth, for the policyholders as a whole, was 56.42 years—an improvement of almost a year and a half on 1926, which, however, was not a very favorable year. A large part of the gain, as compared with the previous year, occurred in the early ages of life; for already at age ten, the gain in expectation of life was only one-half year.

From age ten on it is possible to quote separate figures for males and females, classified according to color. The expectation of life at age ten for white males was 51.88, as compared with 51.41 in 1926 (a gain of nearly one-half year), and 51.63 in 1925. For white females, the expectation of life at age ten was 55.32 in 1927, as compared with 54.87 in 1926. For colored males, the corresponding figures were 44.99 in 1927, as against 44.84 in 1926; for colored females, 46.34 in 1927 as against 45.60 in 1926.

In reflecting on the figures here presented, it must always be borne in mind that the Industrial policyholders represent essentially a class of city dwellers engaged in occupations involving a life hazard somewhat in excess of that of the general population of the United States. For this reason, even in a record year, the expectation of life in our Industrial Department cannot quite equal that based on the Federal statistics of mortality, relating to the general population. But it is

significant to observe that each year the figure for this large proportion of the people is closely approaching that of the general population. In our opinion, it will not be long before the wage earners of this country, their wives and children, will enjoy as long a tenure of life as does the average American. The mortality of the industrial population since 1911, has been dropping at approximately double the rate of decline observed for the population at large. If this advantage persists for a few more years, the present leading position of the general population will soon be wiped out.

Expectation of Life at Selected Ages. By Color and Sex. Metropolitan Life Insurance Company. Industrial Department. 1927 and 1926.

AGE IN YEARS	Total Industrial Department		White				Colored			
			Males		Females		Males		Females	
	1927	1926	1927	1926	1927	1926	1927	1926	1927	1926
0	56.42	55.02	*	*	*	*	*	*	*	*
10	52.62	52.10	51.88	51.41	55.32	54.87	44.99	44.84	46.34	45.60
15	48.09	47.17	47.34	46.90	50.71	50.24	40.81	40.52	42.16	41.46
20	43.79	43.28	42.93	42.49	46.33	45.87	37.08	36.80	38.64	37.97
25	39.73	39.19	38.66	38.21	42.18	41.68	33.60	33.40	35.46	34.77
30	35.69	35.17	34.44	34.02	38.05	37.53	30.05	29.91	32.15	31.41
35	31.65	31.20	30.25	29.42	33.87	33.40	26.59	26.49	28.77	28.07
40	27.73	27.30	26.26	26.00	29.74	29.27	23.33	23.18	25.46	24.69
45	23.99	23.58	22.49	22.38	25.73	25.29	20.24	19.98	22.32	21.37
50	20.41	20.05	18.93	19.02	21.88	21.51	17.31	16.92	19.26	18.24
55	17.07	16.67	15.77	16.78	18.23	17.87	14.58	14.11	16.32	15.34
60	13.99	13.58	12.91	12.84	14.90	14.56	12.00	11.59	13.75	12.78
65	11.21	10.85	10.25	10.26	11.92	11.67	9.87	9.43	11.48	10.47
70	8.82	8.53	8.03	8.04	9.39	9.28	8.15	7.60	9.50	8.65
75	6.81	6.64	6.28	6.29	7.23	7.50	6.72	6.34	7.74	7.17
80	5.15	5.09	4.88	4.89	5.45	5.69	5.61	5.34	6.18	5.81
85	3.95	3.89	3.81	3.80	4.17	4.11	4.54	4.38	5.18	4.93
90	3.00	2.96	3.02	2.95	3.16	3.13	4.05	3.85	4.56	4.39

*Not computed; data insufficient.

HEALTH GAINS AMONG THE COLORED PEOPLE

The current decade and the immediately preceding one have witnessed material improvement in the life span of both white and colored Americans. But in childhood, in adolescence and in early adult life, where the gains have been greatest, the drop in the deathrate of the colored people has almost matched that of the white. At all ages combined, and after age 25, the improvement for negroes, substantial as it

is, approximates only one-half that for the whites. These are some of the more important facts brought out by a recently completed study, covering the period 1911 to 1927, of the mortality records of the Industrial policyholders of the Metropolitan Life Insurance Company, who now number approximately 18,500,000 and of whom 2,500,000 are negroes.

Between 1911 and 1927, the mortality rate of the negroes at all ages dropped 17.3 per cent. as compared with 31.6 per cent. for the whites. It is true that, by comparison, the improvement of the white policyholder has surpassed the health progress shown for the colored. But when we consider that it was not much more than twenty years ago when extreme pessimism was expressed as to the future of the negro in America, the gain he has made is impressive, indeed. Some students of negro health conditions even went so far as to predict that the colored race in this country was headed for extinction. Instead, during a period in which we have had a World War, two great pandemics of influenza and a great migration of negroes from the farms of the south to the cities of the north, the colored race has registered a declining deathrate. Colored men who left the south, exchanged, for the most part, agricultural work for that of the iron and steel mills, the coal mines, and other fields of labor in which the negro, brought up in a rural environment, was not expected to thrive physically. Many of these negro migrants suffered seriously from inadequate housing. This situation, which was acute in some cities, led to higher mortality. Were it not for this heavy migration, the improvement in negro mortality would certainly have been much greater.

The table on page 5 shows that the deathrate among insured negro children (one to 14 years) improved 38 per cent. between the three-year periods 1911-1913 and 1925-1927, or almost as much as did the mortality of the whites (43.6 per cent.). It was in this group that the greatest gain was made for each race. Again, between 15 and 24 years, the negro gain of 28.8 per cent. closely approached that of the whites (31.9 per cent.). But, as noted above, in every age group after age 25, the improvement for the negroes, while large, approximated only one-half that for the whites.

The greatest single factor in the improvement of the mortality rate of the negroes during this period has been the decline in the deathrate for tuberculosis. While the gain for all causes combined was 17.3 per cent., that for tuberculosis was 44.7 per cent. With respect to this disease, the gain for the colored approximates three-quarters that for the whites. In childhood, each race made about the same amount of

Deathrates per 1,000 from All Causes of Death, 1911 to 1913 Combined and 1925 to 1927 Combined. By Color and Age. Per cent. Decline 1925-1927 over 1911-1913. Metropolitan Life Insurance Company Industrial Premium-paying Business.

AGE PERIOD	WHITE			COLORED		
	Deathrates per 1,000		Per Cent. Decline 1925–1927 over 1911–1913	Deathrates per 1,000		Per Cent. Decline 1925–1927 over 1911–1913
	1925–1927	1911–1913		1925–1927	1911–1913	
All Ages—One Year and Over	7.8	11.4	31.6	14.3	17.3	17.3
1 to 14	3.1	5.5	43.6	5.7	9.2	38.0
15 to 24	3.2	4.7	31.9	8.4	11.8	28.8
25 to 34	4.7	8.2	42.7	10.0	13.2	24.2
35 to 44	7.4	12.3	39.8	14.5	17.7	18.1
45 to 64	19.5	24.7	21.1	28.1	32.3	13.0
65 and over	64.9	80.3	19.2	76.3	84.8	10.0

improvement, and each, by 1927, had more than halved the deathrate of the three-year period 1911-1913. After age 65, where about 8 per cent. of the deaths from tuberculosis occur, the gain for the colored was as great as that for the whites. At the intervening ages (15 to 64 years) where the great bulk of the deaths from tuberculosis takes place, the gains ranged from a minimum of 35 per cent. to a maximum of 52 per cent. for the colored.

Thus, for tuberculosis (which was the chief cause of death for each race twenty years ago) as well as for all causes combined, gains have been experienced regardless of color and age. Other studies have shown that improvement has also been achieved regardless of economic condition, in all sections of the country, in both the rural and urban population, and in virtually every branch of industry.

In 1928, tuberculosis for the first time will probably be displaced as the leading cause of death among the colored people. The tuberculosis deathrate among negroes insured in the Metropolitan's Industrial Department, for the first nine months of 1928, was 233.6 per 100,000 while that for heart disease was 233.9. There is, it is true, only a fractional difference; but this takes on much significance when the rates for these diseases for preceding years are considered. In 1911,

Deathrates per 100,000 from Tuberculosis of Lungs, 1911 to 1913 Combined and 1925 to 1927 Combined. By Color and Age. Per cent. Decline 1925-1927 over 1911-1913. Metropolitan Life Insurance Company Industrial Premium-paying Business

AGE PERIOD	WHITE			COLORED		
	Deathrates per 100,000		Per Cent. Decline 1925–1927 over 1911–1913	Deathrates per 100,000		Per Cent. Decline 1925–1927 over 1911–1913
	1925–1927	1911–1913		1925–1927	1911–1913	
All Ages— One Year and Over	68.9	167.7	58.9	203.0	367.2	44.7
1 to 14	6.2	15.2	59.2	57.9	133.1	56.5
15 to 24	88.3	176.0	49.8	346.6	533.5	35.0
25 to 34	120.1	318.9	62.3	276.3	490.6	43.7
35 to 44	114.6	345.8	66.9	207.2	432.0	52.0
45 to 64	110.5	241.7	54.3	160.8	300.6	46.5
65 and over	107.5	181.7	40.8	131.0	220.3	40.5

the tuberculosis deathrate for colored policyholders was two and one-quarter times that for heart disease; in 1915, it was still more than twice as high; by 1920, the margin had been reduced to about 70 per cent., and by 1925, to only six and one-half per cent.; in 1928, it may be entirely wiped out. If so, the displacement of tuberculosis from its position as the leading cause of death among negroes will be due, in part, to a 25 per cent. increase in the mortality from heart disease, but the principal factor will be a 44 per cent. reduction in the deathrate for tuberculosis. We shall, in a later editorial, discuss the economic and social significance of these changes.

RESTORATION OF TUBERCULOUS PATIENTS TO HEALTH AND WORKING CAPACITY

The treatment and care of employees who develop active pulmonary tuberculosis is one of the major problems of industrial hygiene. For, the problem consists not merely in prolonging the lives of these people but in restoring them to a degree of health so that they may return to work and stay at work. That it is feasible to achieve these results in a very large measure is demonstrated by the experience of

the Metropolitan Life Insurance Company with its own tuberculous employees. These results are based on its program of sanatorium treatment and after-care which has been in operation for fifteen years. From November, 1913, when the Company opened its Sanatorium down to the end of 1926, there were discharged alive from the Sanatorium, 1,448 patients who had been admitted for treatment of pulmonary tuberculosis. A study was made of the subsequent mortality, morbidity and working capacity of these patients on subsequent anniversaries of their discharge. The results were presented before the ASSOCIATION OF LIFE INSURANCE MEDICAL DIRECTORS at their annual meeting in New York City in October, by Dr. AUGUSTUS S. KNIGHT, Medical Director of the Company.

The importance of discovering cases of tuberculosis while it is still in the early stages is demonstrated throughout this study. For, of the 833 patients discharged who were in the incipient stage of the disease on admission to the Sanatorium, there occurred 39 deaths up to the anniversary of discharge in 1927. On the basis of deathrates of all employees of the Company during the same years, we should have expected 30.14 deaths in this group. The mortality among them is, therefore, 129 per cent. of the expected—nearly one-third higher than average. Among the males, however, the mortality was practically normal, being only 98 per cent. of the expected. The 509 moderately advanced cases, on the other hand, of whom 115 died up to the anniversary in 1927, show a ratio, actual to expected deaths of 548 per cent., or five and one-half times the average, and *four times the mortality of those who were only in the early stages* of the disease. The 106 far advanced cases, moreover, of whom 45 died up to the anniversary in 1927 show a mortality ratio, actual to expected deaths, of 1,698 per cent. or seventeen times the average, and nearly *thirteen times* the subsequent mortality of the incipient cases.

The morbidity study is based on the sickness record of tuberculous ex-patients in service during 1925 and 1926, whose condition was so improved on discharge from the Sanatorium, that they were able to go back to work in the Home Office of the Company. The data relate to 199 such persons in 1925 and 205 in 1926. Females comprise two-thirds of the group. Only absences lasting one or more working days were included in the record. Fortunately there was available for comparison similar morbidity analyses of the whole clerical staff of the Home Office for these two years.

For both years combined, the male ex-patients show an absence rate of 21.4 working days per clerk-year exposed, and the females 42.2

days. This compares with an absence rate of 8.6 days for all males on the clerical staff during the same period, and 13.0 days for all females. Male ex-patients of the Sanatorium, therefore, have an absence rate two and one-half times and females three times that of the corresponding clerical groups at the Home Office.

Absence rates vary, too, according to the stage of the disease on admission to the Sanatorium. Males who were incipient on admission have the remarkably low absence rate of 8.8 days per year; those moderately advanced, 28.8 days per year; and the few far advanced, a rate of 139.3 days per year. Among females, the absence rate of those incipient on admission was 39.7 days per year and those moderrately advanced, 54.3 days.

Another important aspect of the Sanatorium follow-up is the status as regards ability to work. All the cases discharged from the Sanatorium were traced down to the anniversary of discharge in 1927, and have been classified in respect to this status. Of the 1,448 ex-patients discharged alive, 879 or 61 per cent., were at work or able to work at the 1927 anniversary; 167, or 11 per cent., were unable to work. Of the remainder, 199, or 14 per cent. were dead; 140, or 10 per cent. were living, but there was no information available as to whether or not they were able to work; and for 63 ex-patients, or 4 per cent., we were unable to get any information whatsoever. When considered by sex, the above distribution is approximately the same.

The status as regards ability to work is, however, distinctly affected by the stage of the disease on admission to the Sanatorium. More than 71 per cent. of the patients incipient on admission were able to work in 1927, compared with 50 per cent. of those moderately advanced and only 30 per cent. of those far advanced. Only 7 per cent. of the incipient cases were definitely known to be unable to work compared with 16 per cent. of the moderately advanced and with 23 per cent. of the far advanced cases. If considered in relation to the number of those alive on the anniversary date, these differences would be even more marked, for a relatively greater number of the more advanced cases were dead. Only 5 per cent. of the incipient cases were dead at the 1927 anniversary, as against 23 per cent. of the moderately advanced cases and 42 per cent. of the far advanced cases.

Persons with pulmonary tuberculosis can, therefore be, restored to health and normal working capacity. The advantage of discovering cases of pulmonary tuberculosis in the incipient stage is also clearly demonstrated by this study, for not only is the immediate deathrate lower, but also the mortality subsequent to discharge. Sanatorium-

treated cases of incipient tuberculosis have less sickness subsequently than those in the later stages of the disease; more of the early cases than of the more advanced cases are able to resume their work; and fewer of them become partially or permanently disabled. These general statements are true for both sexes, but the subsequent record of males is better than that for females in every one of the three phases covered in this report.

HEALTH RECORD FOR OCTOBER, 1928

Health conditions among the Industrial populations of the United States and Canada during October were by no means as favorable as in either the preceding month of this year or in the corresponding month of 1927. The deathrate was 8.5 per 1,000 as compared with 7.7 in September, 1928 and 7.8 in October, 1927.

Every disease of importance, numerically, registered a higher rate than during October of last year. The most outstanding examples were heart disease and pneumonia, but noteworthy increases were recorded for influenza, tuberculosis, cancer, respiratory diseases other than pneumonia, and Bright's disease. Typhoid fever, for the first time this year, registered a higher deathrate than in the corresponding month of 1927. Smaller margins of increase were recorded for scarlet fever, whooping cough, diabetes, cerebral hemorrhage, and suicides.

The mortality from accidental causes is about the same as in October, 1927, although there were a few more automobile fatalities. Up to November 24th, the deathrate from the latter was still running a little lower than for the corresponding period of last year.

Although 1928 seems destined to record a well below-average deathrate for all causes combined, not all of the public health developments are favorable. Tuberculosis, it is true, will certainly record a new minimal deathrate this year. The rise in the diphtheria mortality in 1927 (which followed a long series of continued declines) has not extended through 1928. There is good ground for the hope that with renewed efforts to increase the number of immunized children, the decided downward trend prevailing up to 1927 will be resumed, and will persist until this disease becomes a negligible item in American mortality statistics. Nineteen twenty-eight has been one of the best years we have ever had with respect to mortality from diarrheal complaints. It is fairly well assured that it will record a new minimum for diseases incidental to pregnancy and childbirth, and that this will be due, in large part, to a marked reduction in deaths from puerperal septicemia. These, together with the prospect of a slight improve-

ment in the automobile fatality death rate, are the favorable developments of the year.

On the other hand, no improvement is in evidence for cancer, and the indications are that the mortality from this disease is destined to keep up its practically continuous rise. Unless there shall be marked improvement during November and December, this will be the fourth successive year of increasing mortality from diabetes. Again, from present indications, the year is going to show much higher mortality from influenza and pneumonia than did 1927, although the deathrates will not be as high as in several prior years.

Foremost among the unfavorable health developments of the year, however, is a sharp rise in the mortality rate from organic heart disease. Up to the week ended November 24th, this was higher than has ever been recorded among Metropolitan Industrial policyholders for the corresponding period of any prior year. An interesting development in connection with this increase in cardiac mortality is that it has not been observed this year in Canada, and that among more than one million Metropolitan policyholders in the states of California, Oregon, Washington, Utah, Idaho, Montana and Colorado, there has actually been recorded a considerable decline.

The general deathrate for the large cities of the United States in October was 11.8 per 1,000. This may be compared with 11.0 for September and 11.3 for October, 1927. Diphtheria, influenza, measles, scarlet fever and smallpox were more prevalent than in September, but there were fewer cases of poliomyelitis and typhoid fever. As compared with October, 1927, there was more sickness from influenza and measles, but not so many cases of diphtheria, poliomyelitis, scarlet fever, smallpox and typhoid fever.

More than twice as many cases of diphtheria were reported as in September, with the most notable increases in Indiana, Michigan, Kansas and Tennessee. Reports from 16 states show more than double the number of influenza cases as compared with September, with noteworthy rises in South Carolina, Tennessee, Oregon and California. There were also twice as many measles cases reported; the largest increases being in Massachusetts, Pennsylvania and Minnesota. Reports from 36 states show 7,402 cases of scarlet fever in October as compared with 3,231 in September, with the greatest increases in Illinois, Maryland and Georgia. Poliomyelitis cases, on the other hand, in 41 states, dropped from 1,233 in September to 616 in October. In Tazewell County, Va., it became necessary to close the schools to prevent the spread of an outbreak of this disease. In-

creases in smallpox cases were reported in Indiana, Kansas, Montana and Colorado.

Noteworthy among the health activities of the month were the annual meetings of the American Public Health Association and the American Child Health Association at Chicago, and the announcement of the development of a new anti-bacterial serum for pneumonia by Dr. WILLIAM H. PARK of the New York City Health Department.

METROPOLITAN LIFE INSURANCE COMPANY

Deathrates* per 100,000 for Principal Causes, Premium-paying Business in Industrial Department (Annual Basis)

MONTHS OF OCTOBER, 1928; SEPTEMBER, 1928, AND OF OCTOBER, 1927

CAUSES OF DEATH	RATE PER 100,000 LIVES EXPOSED*			
	Oct., 1928	Sept., 1928	Oct., 1927	Year 1927
TOTAL—ALL CAUSES	851.9	765.3	780.0	887.9
Typhoid fever	4.2	4.3	3.7	4.6
Measles	.3	.7	.4	4.1
Scarlet fever	1.8	1.0	1.6	3.1
Whooping cough	5.0	4.8	4.1	6.4
Diphtheria	9.5	5.6	9.7	10.6
Influenza	8.6	6.6	6.6	17.8
Tuberculosis (All forms)	83.0	78.1	75.7	93.6
Tuberculosis of resp'y system	73.1	67.8	67.4	81.9
Cancer	77.5	72.2	72.5	74.3
Diabetes mellitus	15.8	14.0	15.2	16.8
Cerebral hemorrhage	51.9	42.6	49.7	55.1
Organic diseases of heart	131.1	114.6	113.5	132.5
Pneumonia (All forms)	57.3	36.4	46.9	77.7
Other respiratory diseases	16.0	12.0	12.8	11.7
Diarrhea and enteritis	37.5	47.1	37.1	24.6
Bright's disease (Chronic nephritis)	64.6	61.1	61.3	69.5
Puerperal state	12.6	12.6	12.8	15.5
Suicides	8.2	8.1	7.5	8.3
Homicides	6.5	7.0	6.9	7.3
Other external causes (excluding suicides and homicides)	63.7	61.9	63.2	63.9
Traumatism by automobiles	21.6	19.8	20.6	18.4
All other causes	196.7	174.6	178.8	190.5

*All figures include infants insured under one year of age.

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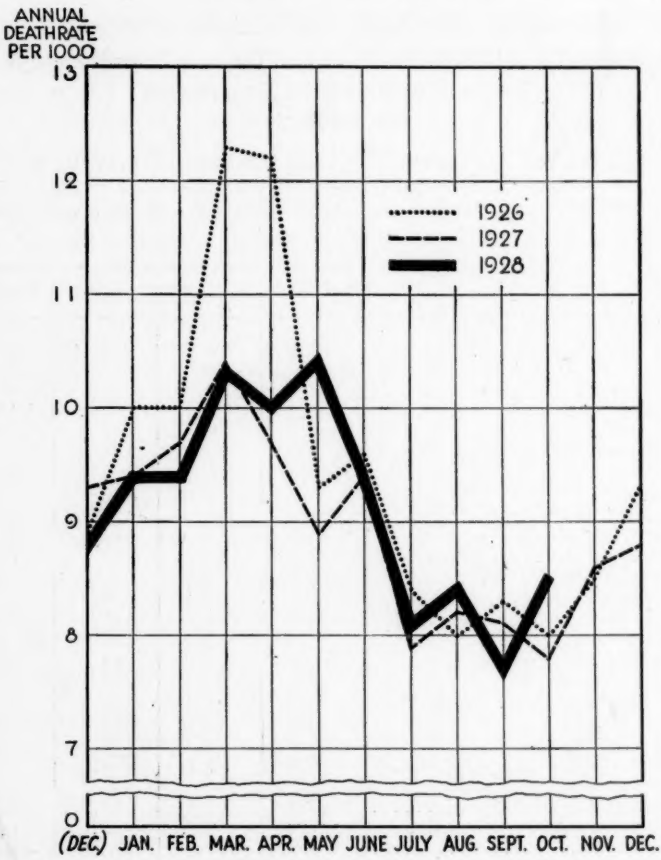
Deathrates from All Causes

METROPOLITAN LIFE INSURANCE CO.
INDUSTRIAL DEPARTMENT



1926	10.0	10.0	12.3	12.2	9.3	9.6	8.4	8.0	8.3	8.0	8.5	9.3
1927	9.4	9.7	10.4	9.7	8.9	9.4	7.9	8.2	8.1	7.8	8.6	8.8
1928	9.4	9.4	10.3	10.0	10.4	9.4	8.1	8.4	7.7	8.5		

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